# StorCase® Technology Data Express® DE100i-SW DE100i-SWC

**User's Guide** 



#### LIMITED WARRANTY

STORCASE TECHNOLOGY, Incorporated ("StorCase") warrants that its products will be free from defects in material and workmanship, subject to the conditions and limitations set forth below. StorCase will, at its option, either repair or replace any part of its product that proves defective by reason of improper workmanship or materials. Repair parts or replacement products will be provided by StorCase on an exchange basis, and will be either new or reconditioned to be functionally equivalent to new.

This warranty does not cover any product damage that results from accident, abuse, misuse, natural or personal disaster, external power surge or failure, or any unauthorized disassembly, repair or modification. StorCase will not be responsible for any software, firmware or other customer data stored within, or interfacing with a StorCase product.

#### **Duration of Warranty**

Seven-Year Warranty: The following StorCase products are covered by this warranty for a period of seven (7) years from the original date of purchase from StorCase or its authorized reseller: all Data Express® removable device enclosures and all StorCase interface cables and accessories specifically intended for use with these products. Data Silo®, Data Stacker® and InfoStation® products are covered by this warranty for a period of seven (7) years, excepting the RAID controller, power supply, fan and blower components, which are covered by the three-year warranty described below.

**Three-Year Warranty**: The following StorCase products are covered by this warranty for a period of three (3) years from the original date of purchase from StorCase or its authorized reseller: all Rhino®JR external expansion chassis and all RAID controller modules. In addition, the following components of the Data Silo®, Data Stacker®, InfoStation® products are subject to warranty for a period of three (3) years: all power supplies, fans and blowers.

#### Warranty Claim Requirements

To obtain warranty service, the defective product must be returned to your local authorized StorCase dealer or distributor, or, with prior StorCase approval, to the StorCase factory service center.

For defective products returned directly to StorCase, a Return Material Authorization ("RMA") number must be obtained by calling StorCase Customer Service at (714) 445-3455. The RMA number must be prominently displayed on the outside of the return package. Shipments must be freight-prepaid and insured, and must include the product serial number, a detailed description of the problem experienced, and proof of the original retail purchase date. Products must be properly packaged to prevent damage in transit. Damage resulting from improper packaging will not be covered by this warranty. The StorCase factory service center is located at 17650 Newhope Street, Receiving Dock, Gate #4, Fountain Valley, CA 92780, U.S.A.





# **Declaration of Conformity**

Company Name: StorCase Technology, Inc.

Corporate Office Address: 17600 Newhope Street

Fountain Valley, CA 92708

Manufacturing Address: 17600 Newhope Street

Fountain Valley, CA 92708

Product Name: Data Express DE100

Model Number: DE100i-XSXX/XXX

Conforms to the following standards:

EMC Directives: EN 50081-1: 1992 Generic Emission

(89/336/EEC) - EN 55022/CISPR22 Class B

EN 50082-1: 1992 Generic Immunity

- IEC 1000-4-2 ESD

- IEC 1000-4-3 Radiated Immunity

- IEC 1000-4-4 Electrical Fast Transient

Low Voltage Directive: EN 60950

(73/23/EEC)

Safety Standards:

CSA (NRTL/C) CAN/CSA-C22.2 No. 950-93

UL 1950

TUV EN 60950: 1988 EN 60950/A2: 1991

EN 60950/A1: 1990

EMI Standards: FCC Part 15, Class B

EMC Standards: AS/NZS 3548 Information Technology Equipment

Year of Manufacture: 1997

Signature: Full name: Dieter Paul

Position: President

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Please check the StorCase web site at http://www.storcase.com or contact your StorCase representative for the latest revision of this document.

## INTRODUCTION

#### **Packaging Information**

The StorCase Technology Data Express® system is shipped in a container designed to provide protection and prevent damage during shipment. The Data Express unit was carefully inspected before and during the packing procedure at the factory. Bent or broken connectors, or evidence of other damage to the Data Express should be reported to the shipper immediately. Refer to Figure 1 for the package contents.

If the wrong Data Express model has been received, please call your reseller or StorCase at (800) 435-0642 to arrange for a Return Material Authorization (RMA). StorCase cannot accept returns which do not display an RMA number on the outside of the package. Return the unit with all the original packing materials.

Before removing any component from its packaging, discharge any static electricity by touching a properly grounded metal object.

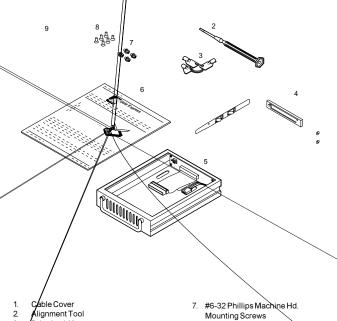
#### Serial Numbers

Both the Data Express receiving frame and carrier are labeled with serial numbers. These numbers must be reported to the StorCase Customer Service Representative in order to receive a Return Material Authorization (RMA) for warranty claims. Locate the serial number labels and record the numbers in the spaces provided below.

Receiving Frame:	_
receiving France.	
Drive Carrier:	

# **Package Contents**

The DE100 package contents include the following items. If any item is missing or damaged, contact your StorCase dealer for a replacement.



- Drive Lock Keys Receiving Frame
- Drive Carrier Insert Sheet

- 8. #6-32 Phillips Flat Hd. Mounting Screws
- 9. 1.25mm/2mm ID Select Cable (DE100i-SW only)

Figure 1: Package Contents

# **General Description**

The StorCase Technology **Data Express® DE100i-SW** and **DE100i-SWC** are removable drive carriers and receiving frames designed to provide durable and reliable mounting for one (1) 3.5" SCSI drive within a 5.25" half-height peripheral slot (Figure 2).

The DE100 allows a drive to be removed and transported to another DE100-equipped computer or expansion chassis, and also provides the ability to secure sensitive data by removing and storing the drive safely for future use. Up to fifteen (15) DE100 units can be attached to one host adapter.

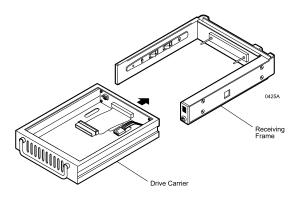


Figure 2: DE100 Receiving Frame and Carrier

This User's Guide describes the steps required to install the StorCase Data Express (DE100i-SW and DE100i-SWC) removable enclosure inside a computer peripheral bay or external expansion chassis. This guide supplements documentation provided with the host computer system, operating system, and the drive to be installed within the Data Express carrier.

## **Receiving Frame Front Panel**

The Key Lock/Drive Power Switch performs three (3) functions. The key lock
assures proper seating of the drive carrier within the receiving frame, turns power
to the drive carrier on and off, and prevents unauthorized removal or installation of
the carrier. For the computer to access data on the DE100 disk drive, the key must
be turned counterclockwise to the locked position.

The key may also be permanently attached (optional) to the locking mechanism as shown in Appendix C.

- The Unit ID Number Indicator (Figure 4) displays the physical address of the DE100 drive carrier when the carrier is Installed and Locked in the receiving frame or Removed from the receiving frame. If the drive carrier is Installed but Not Locked, a "u" will be displayed to indicate an unlocked condition. The unit ID number is selected by means of the unit ID select switch inside the receiving frame using a special alignment tool supplied with the DE100. This procedure is explained later during the installation process.
- The Activity Indicator is a small dot next to the Unit ID Number which illuminates
  to show when the host computer is accessing the data on the DE100 carrier. This
  dot will flash during communication with the host computer.
- Device Spin Down/Up Timer may be disabled by removing Jumper J6 P1-P2 (Figure 5). This feature allows the receiving frame unit number display to provide a visual indication of drive spin down/up activity. Refer to Figure 11 for switch settings.

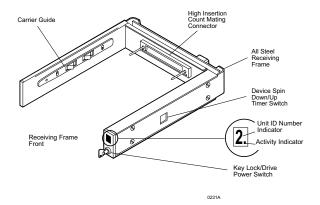


Figure 3: Receiving Frame Front Panel



### INSTALLATION

#### Installing the Drive into the Carrier

#### Preparation

While performing the steps in this section, work on a soft surface to prevent excessive shock to the drive being installed. Also refer to the manufacturer's documentation provided with the drive

NOTE: A #2 Phillips screwdriver will be required during this procedure.

- 1. Remove the drive from its protective packaging.
- Plastic Drive Bezel: If the drive came equipped with a plastic front bezel, it
  must be removed.
- SCSI Drive Termination: Disable or remove the termination resistor packs from the drive. Termination is handled by an external terminator in the DE100 receiving frame. Refer to the documentation provided by the drive manufacturer for the location of these terminators or jumpers.
- SCSI Drive ID Select Jumpers (DE100i-SW only): Locate the SCSI ID Select Jumper positions on the disk drive, and remove any jumper plugs in this area. The SCSI ID cable will be installed into this section of the drive.
- SCSIID Cable (DE100i-SW only): (Figure 7) The DE100i-SW carrier is supplied with one (1) 5-wire cable. This cable is used for remote ID selection by means of the DE100i-SW Unit ID Select Switch inside the receiving frame. The cable is designed to connect to drives with 2mm ID Select connectors.

The cables are made up of **black**, **brown**, **red**, **orange**, and **yellow** wires. The **black** wire is plugged into the pin used to select ID0, the **brown** wire plugs into the pin for ID1, the **red** wire plugs into the pin for ID2, and the **orange** wire connects to ID3. Most drive manufacturers mark these pins with some sort of identification which corresponds to ID0, ID1, ID2, and ID3. The **yellow** wire plugs into the drive activity LED pin.

Disk drives use a row of pins to provide ground to the ID signals. This row of pins is not used when installing the ID select cable to the carrier connector. Refer to the drive manufacturer's documentation for more information.

#### Installation

(DE100i-SW only)

 Attach the I/O cable from the rear distribution board of the DE100i-SW carrier to the disk drive (Figure 6A).

- 2. Attach the 4-pin DC power cable from the rear distribution board to the disk drive (Figure 6A).
- Install the 5-pin ID select cable into the rear signal distribution board connector.
   Refer to Figure 7 for a typical 2mm drive pin connection.
- Carefully insert the drive into the carrier at an angle, cable-end first. Make sure that none of the cables are pinched. Lower the front of the drive carefully into place. Fasten the drive into the carrier with four (4) #6-32 Phillips Flat Hd. screws provided.
- 5. Attach the provided cable cover with two (2) #6-32 Phillips Flat Hd. screws.

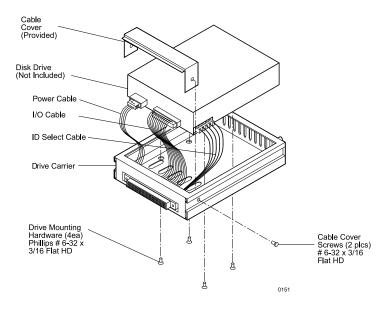


Figure 6A: Drive Installation Assembly (DE100i-SW)

#### Installation

(DE100i-SWC only)

 Attach the I/O cable from the rear distribution board of the DE100i-SWC carrier to the disk drive (Figure 6B).

- Carefully insert the drive into the carrier at an angle, cable-end first. Make sure
  not to pinch the cable. Lower the front of the drive carefully into place.
  Fasten the drive into the carrier with four (4) #6-32 Phillips Flat Hd. screws
  provided.
- 5. Attach the provided cable cover with two (2) #6-32 Phillips Flat Hd. screws.

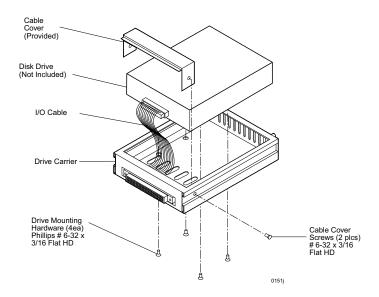


Figure 6B: Drive Installation Assembly (DE100i-SWC)

#### TYPICAL 2MM DRIVE ID PIN CONFIGURATION

NOTE: Applies to the DE100i-SW only.

Figure 7 illustrates a typical SCSI ID select connection to a drive with 2mm ID select pins. The wires on the wire harness connect to the positive pin (or signal pins) on the disk drive. In some cases, the drive manufacturer will label the signal pins as Pin 1, 3, 5, 7, (instead of 0, 1, 2, 3 as shown in Figure 7 below). Also, in some cases, the even-numbered Pins 2, 4, 6 are used for Ground.

Attach the ID select cable to the drive using the 2mm connectors. Align the "ID0" pin with the **black** wire. Attach the 1.25mm connector on the other end of the ID select cable to the 1.25mm connector (J3B) provided on the signal distribution board, located inside the carrier. Refer to the manufacturer's documentation to disable termination on the drive.

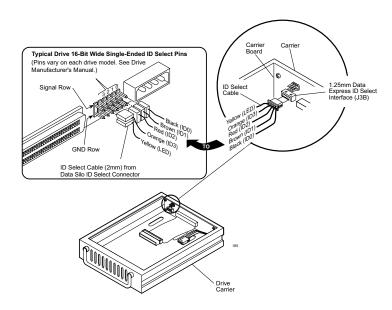
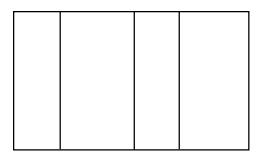


Figure 7: Typical SCSI ID Select Connections (2mm Drive Pins)



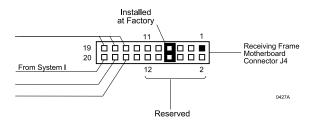


Figure 8: Receiving Frame Connector J4 Pin Configuration

IMPORTANT NOTE: In order to use remote ID selection from a computer or expansion chassis, the Unit ID number on the DE100 receiving frame must be set to "0" with the provided alignment tool. Refer to the section "Selecting the Unit ID Number" later in this manual for the Unit ID selection procedure.

4. With the drive carrier locked in place inside the receiving frame, install the DE100 into the 5.25" drive opening in the computer or expansion chassis. Use the appropriate guides to position the DE100, and fasten it into place with the four (4) #6-32 Phillips screws provided. Figure 9 illustrates the location of the mounting holes. Mounting holes are provided on each side and the bottom of the receiving frame to accommodate a variety of mounting configurations. Use the mounting holes which best suit the computer or expansion chassis configuration.

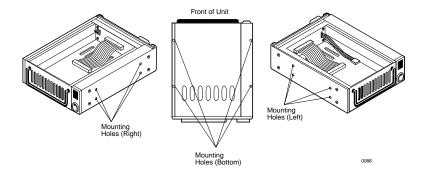


Figure 9: Receiving Frame Mounting Holes

- Adjust the front of the receiving frame so the carrier slides freely in and out on the receiving frame guides. The position of adjoining peripheral units may require adjustment.
- To connect the drive to a Remote Activity LED in the computer system or expansion chassis, connect the appropriate cable(s) to the receiving frame motherboard as shown in Figure 5. Connect J6 Pins 4 & 6 to a remote activity LED.
- Connect the I/O cable from the host adapter to the receiving frame. The Pin 1
  indicator on the cable must be properly aligned. Refer to Figure 5 for the correct
  Pin 1 location.

Make sure that only the last SCSI device is terminated. If the DE100 is at the end of a daisy chain, the terminators on the receiving frame **must** be enabled. If the DE100 is in the middle of a daisy chain, termination should be disabled. Refer to jumper W2 in Figure 5.

8. Connect the power cable from the DC power supply in the computer or expansion chassis to the power connector on the DE100 receiving frame. Refer to Figure 5 for the DE100 receiving frame power connector location.

- 9. Replace any expansion boards that may have been removed earlier. Replace the system cover according to the manufacturer's instructions.
- 10. Reconnect any system or peripheral cables removed earlier.
- 11. Turn ON power to the computer. If the installation has been successful, and all cables have been properly attached, the system should boot normally. Although the computer may not recognize the DE100 yet, the appropriate front panel LED indicators should illuminate.

NOTE: The lock on the DE100 receiving frame functions as a lock and a DC power switch for the carrier unit. The lock must be engaged (turned counterclockwise) in order to supply power to the carrier and installed drive unit.

12. The new drive may need to be formatted or initialized prior to use with the operating system and applications software. Refer to the drive and/or computer manufacturer's documentation for formatting information.

## Selecting the Unit ID Number

- Verify that power is turned on to the DE100 receiving frame by turning on the computer or external expansion chassis. A number should appear in the unit ID display window if the carrier is locked in place.
- Unlock the DE100 drive carrier and remove it from the receiving frame. A "u"
  will be displayed initially when the unit is unlocked but will return to a number
  when the carrier is removed from the receiving frame.

WARNING: Unlocking the carrier unit switches DC power off to the drive. Since disk drives require a short amount of time to spin down, allow about 15 seconds before pulling the carrier unit out of the receiving frame to avoid possible damage to the drive.

- Use the alignment tool supplied with the DE100 to select the ID number of the disk drive. Refer to Figure 10 for the location of the Unit ID Select Switch inside the receiving frame.
- After selecting an appropriate unit ID number, replace the DE100 carrier in the receiving frame, and LOCK IT IN PLACE.

NOTE: The lock on the DE100 receiving frame serves two functions: 1) as a lock to secure the drive; and 2) as a DC power switch for the carrier unit. The lock must be engaged (turned counterclockwise) in order to supply power to the drive carrier.

 The new drive may need to be formatted or initialized prior to use with the operating system and applications software. Refer to the drive and/or computer manufacturer's documentation for formatting information.

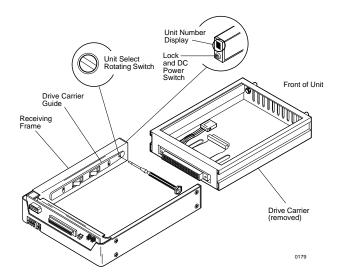


Figure 10: Unit ID Select Switch Location

Table 2: 16-Bit Wide Single-Ended Unit ID Display

DISPLAY (HEX)	UNIT NUMBER ( <sub>10</sub> )	DISPLAY (HEX)	UNIT NUMBER ( <sub>10</sub> )
	0	8	8
- 1	1	9	9
2	2	Я	10
3	3	Ь	11
4	4	Ε	12
5	5	d	13
- 6	6	E	14
7	7	F	15

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## Adjusting the Spin Down/Up Timer

NOTE:

The timer for device spin down is controlled by a small selector, located in a cutout on the side of the DE100 receiving frame as shown in Figure 11. When the key is turned to the OFF position, and when the timer receives a No SCSI Activity signal from the Hot Swap Board, it waits the specified delay time before displaying a "u" on the front panel of the receiving frame. The amount of time required for a disk drive to spin down is approximately 15 seconds or more. This number can vary depending on the type of SCSI device and manufacturer (e.g. a Seagate Barracuda may require 45 seconds). The factory configuration is set for 20 seconds. A different delay time may be selected with the provided aligment tool. Refer to the SCSI device manufacturer's manual for more information on required device spin down time.

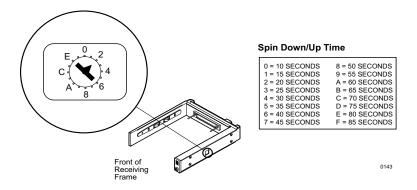


Figure 11: Device Spin Down/Up Timer

# **APPENDICES**

# **Appendix A - Specifications/Dimensions**

SCSI Data Express subsystems conform to the Small Computer Systems Interface (SCSI) Standard set by the American National Standards Institute (ANSI).

Environmental Specifications				
	Operating	Storage		
Ambient Temperature	-5° C to 50° C	-45° C to 75° C		
Relative Humidity <sup>(1)</sup>	10% to 80%	10% to 90%		
Altitude	-1000 to 50,000 ft	-1000 to 50,000 ft		
	-304m to 15240m	-304m to 15240m		
Shock (2)	10g	60g		

<sup>(1)</sup>Non-condensing with maximum gradient of 10% per hour.

<sup>(2)11</sup> msec pulse width 1/2 sine wave.

Physical Specifications	Carrier	Receiving Frame
Height	1.68" (42.7mm)	1.70" (43.2mm)
Width	4.67" (118.6mm)	5.75" (146.1mm)
Depth	7.38" (187.5mm)	8.18" (207.8mm)
Weight	1.2lb (0.55kg)	1.3lb (0.59kg) <sup>(1)</sup>

<sup>(1)</sup>With carrier removed.

Chassis Reliability/Maintainability			
MTBF	500,000 Hours		
MITR	5 Minutes		
Preventive			
Maintenance	None		

Electrical Specifications				
Input	+5V	65mA		
	+12V	400µA		

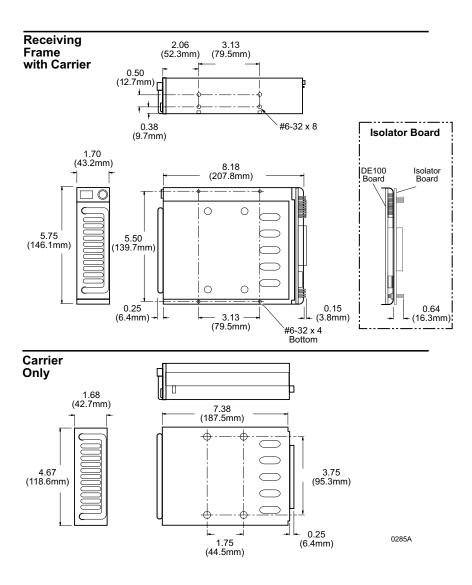


Figure A-1: DE100 Physical Dimensions (Dimensions are for reference only)

# **Appendix B - Factory-Installed Options**

## **DE100 Hot Swap Board**

The DE100 SCSI Hot Swap Board (P/N DX100-SW/H) allows the installation, removal or exchange of DE100i-SW and DE100i-SWC carriers while your computer system is operating by monitoring and protecting the computer system and other peripheral devices on the SCSI Bus. The Hot Swap option eliminates the need to shut down your system when adding or removing a SCSI device by performing two functions:

- Delays power up/down of the drive until the time period between SCSI bus cycles.
   This prevents the interruption of any SCSI bus activity by other devices on the bus.
- Prevents drive power sequencing from generating noise on the SCSI bus, thus preventing data transfer corruption on other devices.

Please note that, whereas UNIX and Apple-based systems provide mount/dismount drive commands, most PC systems do not provide such a feature. When using one of these operating systems, it may be necessary to reboot the computer after adding or changing a drive. This reboot activity will force the SCSI host adapter to rescan its SCSI bus for physically attached drives, and will then be able to access the new or changed drive.

## Attaching the Hot Swap Board

The DE100i-SW and DE100i-SWC may be purchased with the Hot Swap option factory-installed. If the Hot Swap Board has not already been attached to the receiving frame, follow the instructions below to add the Hot Swap Board:

NOTE: The drive carrier must be installed in the receiving frame when removing or attaching the Hot Swap Board to ensure proper alignment between the motherboard and the disk drive.

- Remove the two (2) Phillips head machine screws from the receiving frame motherboard and set the screws aside (Figure B-1).
- Remove jumpers on the receiving frame motherboard locations J4 Pins 7 & 8, and J6 Pins 1 & 2 (Figure 5). Also make sure that W2 is set to Position "A" (default setting) to disable onboard termination from the receiving frame motherboard.
- Attach the two (2) provided stand-offs into the receiving frame motherboard holes in
  place of the two removed screws. Carefully align the connectors of the Hot Swap
  Board with the connectors on the receiving frame board and gently push the Hot Swap
  Board into position. Make certain that all connectors are properly mated.

#### Carrier Removal

Follow the procedures below to remove the DE100 carrier from the receiving frame equipped with the Hot Swap option.

- Verify that the drive is not active. If the system is on a network, make certain other users are not accessing the target drive, then disable it from the network. Dismount the drive.
- Turn the DE100 key lock mechanism (located on the front of the receiving frame), clockwise to the OFF position. This unlocks the drive from the receiving frame and activates the Hot Swap Board. The unit ID number on the display will begin flashing.

WARNING: Be careful not to remove or disturb the carrier unit at this point. Although the carrier is physically unlocked, the drive requires a minumum of 15 seconds to spin down and is subject to vibration and possible damage during this period.

- As the unit ID number flashes, the Hot Swap Board monitors the activity of the SCSI bus. When activity is no longer present, the Hot Swap Board will remove power from the drive and then remove the device from the SCSI Bus. The unit number will continue to flash during this period.
- 4. After a short length of time the unit display will turn from a flashing unit number to a steady "u", indicating that the device is powered down, unlocked and ready to be removed from the receiving frame.

#### Carrier Installation

Follow the procedures below to install the DE100 carrier into the receiving frame equipped with the Hot Swap option.

- 1. Install the carrier into the receiving frame. A "u" will be present on the front panel.
- Turn the key lock mechanism, located on the front of the receiving frame, counterclockwise to the ON position. This locks the drive into the receiving frame and activates the Hot Swap Board. The drive will begin to spin up and the unit number on the display will begin flashing.
- After a short length of time the unit display will stop flashing, indicating that the device is ready to be used.

# **Jumper Options**

The jumpers on the Hot Swap Board are similar to those on the standard SCSI Data Express Motherboard. See Figure B-2 for the Hot Swap Board jumper options. Make sure the factory-installed jumper is attached to J4 - Pins 1 & 2.

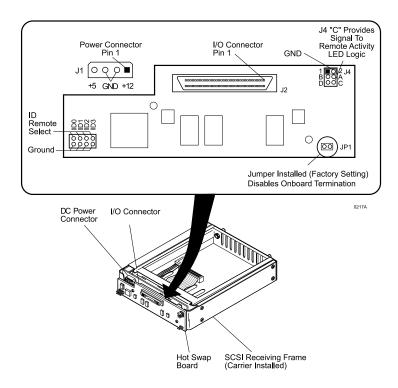


Figure B-2: Hot Swap Board Jumper Options

#### Solenoid Drive Lock

The factory installed solenoid option prevents premature removal of the carrier and drive unit until the target drive has fully spun down. For most disk drives, this period of time can range from 15-40 seconds, depending on the type of drive being used (e.g. Seagate Barracuda drives require up to 50 seconds). Refer to the drive manufacturer's documentation for specific drive information.

The solenoid lock is controlled by a timing switch located on the side of the receiving frame. Refer to the section "Adjusting the Spin Down/Up Timer", for information describing the readjustment of the timer setting.

The solenoid option provides an extra step in drive protection by preventing the removal and movement of the drive until the drive motor has fully stopped.

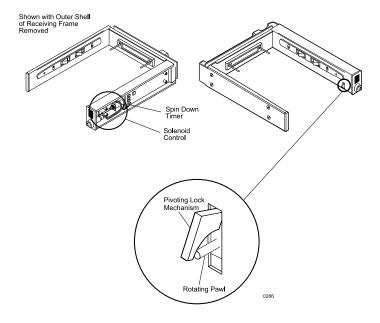
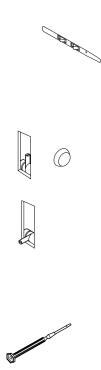


Figure B-3: Solenoid Mechanism



# **Appendix D - Optional Accessories**

## **Carrying Case**

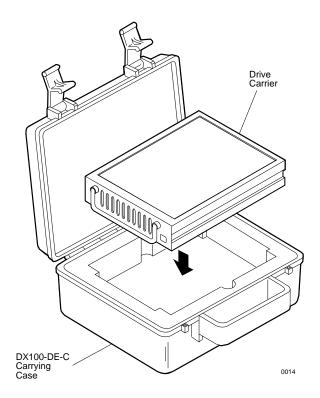


Figure D-1: Carrying Case

The optional molded plastic carrying case is designed to transport the DE100 carrier from one site to another in a safe, impact and moisture resistant environment. Its compact dimensions, 7" long x 9" wide x 3.5" high, make it easy to carry and to store. The foam lining is contoured to fit a single Data Express carrier. Contact your StorCase dealer for further details and ordering information.

#### **Drive Cover**

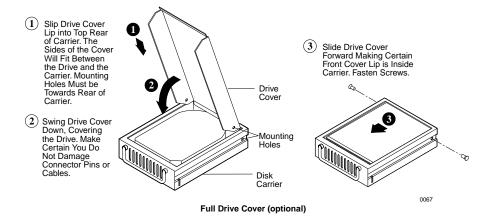


Figure D-2: Full Drive Cover

The full drive cover (P/N DX100-COV) is an attractive metal cover which can provide additional protection to the drive, preventing foreign material from coming in contact with the drive and cables. The full drive cover is similar to the cable cover provided with the DE100i-SW and DE100i-SWC except the full drive cover protects the drive as well as the cables. It is easily installed with two (2) #6-32 Phillips Flat Hd. screws as shown in the illustration above.

NOTE: The drive cover may not be compatible with all 3.5" half-height drives. Exact drive height and fit within the DE100i-SW and DE100i-SWC frame can vary between drive manufacturers. Please contact StorCase for technical assistance before ordering the drive cover.

# **Drive Plug**

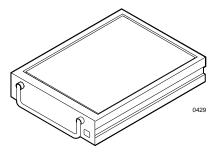


Figure D-3: Drive Plug

The drive plug (P/N DX100-PLUG), is designed to fill system or external enclosure bays that are occupied by receiving frames that have no carrier units installed. The purpose of the plug is to provide an attractive and functional method of directing proper air flow to the other installed devices in the system or external enclosure.

Reader's Comments 27

## Reader's Comments

Please take a few moments when your computer system is up and running to send us your ideas and suggestions for improving our products and documentation. Did the installation go smoothly for you? Are there any changes you would like us to make, either with the hardware itself, or with the installation instructions? Everyone at StorCase Technology is working toward the goal of providing you with the highest quality, most cost effective, products available on the market, and we need your comments to guide our efforts. We look forward to hearing from you soon!

	Date:			
Your Name:				
Address:				
Telephone:	(	)		

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